In the Claims

This listing of claims will replace all prior versions and listings of claims in this application.

1 (Original). A method for providing estrogen replacement therapy to a patient while minimizing undesirable side effects associated with estrogen treatment or therapy, wherein said method comprises administering to the patient an effective amount of a quinol that is converted to a biologically active estrogen compound *in vivo*.

2 (Original). The method according to claim 1, wherein the quinol is converted to the biologically active estrogen compound via enzyme-catalyzed reduction.

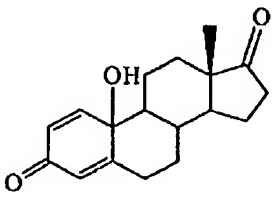
3 (Original). The method according to claim 2, wherein the enzyme catalyzed reduction occurs with NADH as a reducing agent.

4 (Original). The method according to claim 2, wherein the enzyme catalyzed reduction occurs with NADPH as a reducing agent.

5 (Original). The method according to claim 1, wherein the undesirable side effect is excessive estrogenic uterine tissue stimulation.

6 (Original). The method according to claim 1, wherein the undesirable side effect is excessive estrogenic breast tissue stimulation.

7 (Original). The method according to claim 1, wherein the quinol has the general structure:



8 (Original). The method according to claim 1, further comprising administering the quinol by a route selected from the group consisting of oral, buccal, intramuscular, transdermal, intravenous, and subcutaneous.

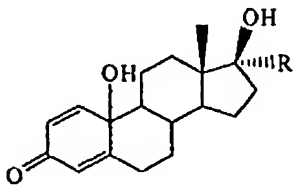
9 (Original). The method according to claim 1, wherein the quinol is regenerated when the biologically active estrogen compounds capture a free-radical reactive oxygen species.

10 (Original). The method according to claim 1, wherein the biologically active estrogen compounds are provided to the patient for the treatment or prevention of symptoms, diseases, or conditions associated with menopause.

11 (Original). The method according to claim 10, wherein the biologically active estrogen compounds are provided to the patient for the treatment or prevention of conditions associated with the bone.

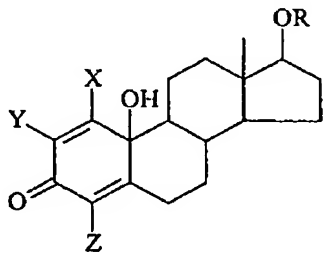
12 (Original). The method according to claim 10, wherein the biologically active estrogen compounds are provided to the patient for treatment or prevention of conditions associated with heart disease.

13 (Original). The method according to claim 1, wherein the quinol has the general structure:



wherein R is selected from the group consisting of H and ethynyl.

14 (New). A quinol that is converted to a biologically active estrogen compound via enzyme catalyzed reduction, said quinol having the general structure



wherein

R is selected from the group consisting of H, alkyl, cycloalkyl, aryl, heterocycle, heteroaryl, alkylamino, hydroxyalkyl, alkoxyalkyl, and alkylaryl;

X is selected from the group consisting of hydrogen, halogen, isopropyl, alkyl, alkenyl, alkynyl, carbocycle, cycloalkyl, aryl, heterocycle, heteroaryl, alkylamino, hydroxyalkyl, alkoxyalkyl, and a linear or branched hydrocarbon from 1-15 atoms carbon atoms in length, that can optionally include one or more heteroatoms in the chain;

Y is selected from the group consisting of hydrogen, halogen, isopropyl, alkyl, alkenyl, alkynyl, carbocycle, cycloalkyl, aryl, heterocycle, heteroaryl, alkylamino, hydroxyalkyl, alkoxyalkyl, and a linear or branched hydrocarbon from 1-15 atoms carbon atoms in length, that can optionally include one or more heteroatoms in the chain; and

Z is selected from the group consisting of hydrogen, halogen, isopropyl, alkyl, alkenyl, alkynyl, carbocycle, cycloalkyl, aryl, heterocycle, heteroaryl, alkylamino, hydroxyalkyl, alkoxyalkyl, and a linear or branched hydrocarbon from 1-15 atoms carbon atoms in length, that can optionally include one or more heteroatoms in the chain.

15 (New). The quinol according to claim 14, wherein X and Y are hydrogen, and Z is not hydrogen.

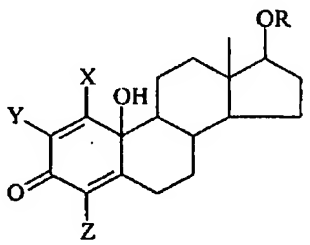
16 (New). The quinol according to claim 14, wherein X and Z are hydrogen, and Y is not hydrogen.

17 (New). The quinol according to claim 14, wherein X is hydrogen.

18 (New). The quinol according to claim 14, wherein the quinol is regenerated when the biologically active estrogen compounds capture a free-radical reactive oxygen species.

19 (New). The quinol according to claim 19, wherein the enzyme catalyzed reduction occurs with NADPH as a reducing agent.

20 (New). A pharmaceutical composition comprising a quinol that is converted to a biologically active estrogen compound via enzyme catalyzed reduction, wherein said composition further comprises a pharmaceutically acceptable carrier, wherein said quinol has the general structure:



wherein

R is selected from the group consisting of H, alkyl, cycloalkyl, aryl, heterocycle, heteroaryl, alkylamino, hydroxyalkyl, alkoxyalkyl, and alkylaryl;

X is selected from the group consisting of hydrogen, halogen, isopropyl, alkyl, alkenyl, alkynyl, carbocycle, cycloalkyl, aryl, heterocycle, heteroaryl, alkylamino, hydroxyalkyl, alkoxyalkyl, and a linear or branched hydrocarbon from 1-15 atoms carbon atoms in length, that can optionally include one or more heteroatoms in the chain;

Y is selected from the group consisting of hydrogen, halogen, isopropyl, alkyl, alkenyl, alkynyl, carbocycle, cycloalkyl, aryl, heterocycle, heteroaryl, alkylamino, hydroxyalkyl, alkoxyalkyl, and a linear or branched hydrocarbon from 1-15 atoms carbon atoms in length, that can optionally include one or more heteroatoms in the chain; and

Z is selected from the group consisting of hydrogen, halogen, isopropyl, alkyl, alkenyl, alkynyl, carbocycle, cycloalkyl, aryl, heterocycle, heteroaryl, alkylamino, hydroxyalkyl, alkoxyalkyl, and a linear or branched hydrocarbon from 1-15 atoms carbon atoms in length, that can optionally include one or more heteroatoms in the chain.

21 (New). The pharmaceutical composition according to claim 20, wherein X and Y are hydrogen, and Z is not hydrogen.

22 (New). The pharmaceutical composition according to claim 20, wherein X and Z are hydrogen, and Y is not hydrogen.

23 (New). The pharmaceutical composition according to claim 20, wherein X is hydrogen.

24 (New). The pharmaceutical composition according to claim 20, wherein the quinol is regenerated when the biologically active estrogen compounds capture a free-radical reactive oxygen species.

25 (New). The pharmaceutical composition according to claim 20, wherein the enzyme catalyzed reduction occurs with NADH as a reducing agent.